

THAT WHICH IS CLAIMED IS:

1. An air duct outlet, comprising:
  - a housing comprising an air passageway that terminates at an air outlet;
  - 5 a reciprocating member movably secured to the housing and configured for reciprocal movement along a longitudinal axis thereof;
  - a drive source operably connected to the reciprocating member and that transmits reciprocating motion to the reciprocating member;
- 10 at least one air-directing vane pivotally attached within the air passageway and movable within a range of positions to direct an air stream flowing through the air passageway and exiting from the outlet; and
- 15 an actuator extending from the housing and movable between first and second positions, wherein the actuator is operably coupled with a drive arm that is operably coupled with the at least one air-directing vane to allow a user to manually pivot the at least one air-directing vane within the range of positions via movement of the actuator between the first and second positions, and wherein the actuator is movable to a third position wherein the reciprocating member operably engages the drive arm and causes the at least one air-directing vane 20 to oscillate automatically within the range of positions.
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2. The air duct outlet of Claim 1, wherein the drive source comprises:

- 30 an electrical motor attached to the housing that comprises a rotating drive shaft; and
- a linkage operably connected to the rotating drive shaft and to the reciprocating member, wherein the linkage converts rotational motion of the drive shaft

into reciprocating motion and transmits the reciprocating motion to the reciprocating member.

3. The air duct outlet of Claim 1, wherein  
5 the at least one air-directing vane comprises a plurality of air-directing vanes pivotally secured within the housing in spaced-apart adjacent relationship, each air-directing vane being pivotally secured about one of a plurality of substantially parallel axes, wherein the 10 air-directing vanes are operably connected together such that pivotal movement of any one of the air-directing vanes causes pivotal movement of the remaining air-directing vanes.

15 4. The air duct outlet of Claim 1, wherein the actuator comprises a thumbwheel extending from the housing.

20 5. The air duct outlet of Claim 1, wherein the actuator comprises a sliding member extending from the housing.

25 6. The air duct outlet of Claim 1, wherein the drive source transmits reciprocating motion continuously to the reciprocating member.

7. An air duct outlet, comprising:  
a housing comprising a planar first wall and a convexly-curved second wall that are in adjacent, 30 spaced-apart relationship and that define an air passageway having an inlet and a flared outlet;  
a reciprocating member movably secured to the housing and configured for reciprocal movement along a longitudinal axis thereof;  
35 a drive source operably connected to the reciprocating member and that transmits reciprocating

5 motion to the reciprocating member; an air-directing vane pivotally attached within the air passageway and movable within a range of positions that are increasingly transverse to the first wall, wherein an air stream flowing through the air passageway is deflected by an amount that increases with each position of the air-directing vane in the range such that the air stream adheres to a portion of the second wall by an amount that increases with each position of the air-directing vane in the range and such that the air stream exits from the outlet in a direction that is increasingly transverse to a direction normal to the outlet; and

10 an actuator extending from the housing and movable between first and second positions, wherein the actuator is operably coupled to a drive arm that is operably coupled with the air-directing vane to allow a user to manually pivot the air-directing vane within the range of positions via movement of the actuator between the first and second positions, and wherein the actuator is movable to a third position wherein the reciprocating member engages the drive arm and causes the air-directing vane to oscillate automatically within the range of positions.

15 8. The air duct outlet of Claim 7, wherein the drive source comprises:

20 an electrical motor attached to the housing that comprises a rotating drive shaft; and a linkage operably connected to the rotating drive shaft and to the reciprocating member, wherein the linkage converts rotational motion of the drive shaft into reciprocating motion and transmits the reciprocating motion to the reciprocating member.

25 9. The air duct outlet of Claim 7, wherein

respective end portions of the first and second walls at the air passageway inlet are substantially parallel.

5 10. The air duct outlet of Claim 7, wherein respective end portions of the first and second walls at the air passageway outlet are substantially orthogonal.

10 11. The air duct outlet of Claim 7, wherein movement of the air-directing vane between endpoints of the range causes a change in direction of an air stream exiting the outlet of between about 0° and about 90° relative to a direction normal to the outlet.

15 12. The air duct outlet of Claim 7, wherein the air-directing vane is pivotally attached within the passageway adjacent the inlet.

20 13. An air duct outlet, comprising:  
a housing comprising a pair of adjacent air passageways that each terminate at a respective air outlet;

25 a reciprocating member movably secured to the housing and configured for reciprocal movement along a longitudinal axis thereof;

a drive source operably connected to the reciprocating member and that transmits reciprocating motion to the reciprocating member;

30 an air-directing vane pivotally attached within each of the air passageways, wherein each air-directing vane is movable within a range of positions to direct an air stream exiting from the respective air passageway outlet; and

35 a pair of actuators extending from the housing, wherein each actuator is movable between first and second positions, wherein each actuator is operably coupled to a respective a drive arm that is operably coupled with a

respective air-directing vane to allow a user to manually pivot the air-directing vane within the range of positions via movement of the actuator between the first and second positions, and wherein each actuator is  
5 movable to a third position wherein the reciprocating member engages a respective drive arm and causes a respective air-directing vane to oscillate automatically within the range of positions.

10                   14. The air duct outlet of Claim 13, wherein the drive source comprises:

                      an electrical motor attached to the housing that comprises a rotating drive shaft; and  
15                   a linkage operably connected to the rotating drive shaft and to the reciprocating member, wherein the linkage converts rotational motion of the drive shaft into reciprocating motion and transmits the reciprocating motion to the reciprocating member.

20                   15. The air duct outlet of Claim 13, wherein each air-directing vane comprises a plurality of air-directing vanes pivotally secured within a respective air passageway in spaced-apart adjacent relationship, each air-directing vane being pivotally secured about one of a plurality of substantially parallel axes, wherein the air-directing vanes are operably connected together such that pivotal movement of any one of the air-directing vanes causes pivotal movement of the remaining air-directing vanes.

30                   16. The air duct outlet of Claim 13, wherein each actuator comprises a thumbwheel extending from the housing.

35                   17. The air duct outlet of Claim 13, wherein each actuator comprises a sliding member extending from

the housing.

18. The air duct outlet of Claim 13 wherein  
each air passageway comprises a planar wall and  
5 a convexly-curved wall in adjacent, spaced-apart  
relationship, and wherein each respective vane is movable  
within a range of positions that are increasingly  
transverse to a respective planar wall, wherein an air  
stream flowing through each air passageway is deflected  
10 by an amount that increases with each position of a  
respective vane in the range such that the air stream  
adheres to a portion of a respective convexly-curved wall  
by an amount that increases with each position of the  
vane in the range and such that the air stream exits from  
15 a respective outlet in a direction that is increasingly  
transverse to a direction normal to the outlet.

19. The air duct outlet of Claim 18, wherein  
movement of each respective vane between endpoints of the  
20 range causes a change in direction of an air stream  
exiting a respective outlet of between about 0° and about  
90° relative to a direction normal to the outlet.

20. The air duct outlet of Claim 18, wherein  
25 each vane is pivotally attached within a respective  
passageway adjacent the inlet.